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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,419	10/27/2003	Linlin Chen	29195-8171.US04	4483
25096	7590	09/08/2004	EXAMINER	
PERKINS COIE LLP			PARSONS, THOMAS H	
PATENT-SEA			ART UNIT	
P.O. BOX 1247			PAPER NUMBER	
SEATTLE, WA 98111-1247			1745	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,419	CHEN ET AL.	
	Examiner	Art Unit	
	Thomas H Parsons	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-63 is/are pending in the application.
- 4a) Of the above claim(s) 39-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 39-63 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 24 June 2004.

Specification

2. A substitute specification excluding the claims is required pursuant to 37 CFR 1.125(a) because the specification includes delineations and amendments that could lead to confusion or mistake during issue and printing processes. See in particular page 2, line 13; page 3, line 1; page 6, line 4; page 14, line 15; page 15, line 6; page 17, line 2; and, page 18, line 10. In addition, the spacing of the lines and small print make reading of the specification difficult. A substitute specification with lines double spaced on good quality paper is required.

A substitute specification must not contain new matter. The substitute specification must be submitted with markings showing all the changes relative to the immediate prior version of the specification of record. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. An

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accompanying clean version (without markings) and a statement that the substitute specification contains no new matter must also be supplied. Numbering the paragraphs of the specification of record is not considered a change that must be shown.

3. The disclosure is objected to because of the following informalities:

Page 7, line 10, suggest inserting "is" after "Fig. 4B";

lines 13, 15 and 17, suggest changing "eletromicrograph" to "electromicrograph";

and,

page 15, line 6, suggest changing "70a" to --70--.

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference sign "8" as mentioned on page 9, line 14, reference sign "85" as mentioned on page 19, line 15, and reference sign "120" as mentioned on page 21, line 8. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted

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by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 34-38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 34-37 of copending Application No. 10/357,422. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Claim 34 of the instant application discloses **processing station configured to electrochemically deposited copper** whereas claim 34 of the copending application discloses **processing station configured to electroplate copper**. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected an apparatus configured to electroplate copper to be capable of electrochemically depositing copper as both structurally similar and both employ similar plating solutions.

Claim 35: Claim 35 of copending Application No. 10/357,422 discloses a first processing station configured to operate in the seed layer enhancement mode and a second processing station configured to operate in the bulk plating mode.

Claim 36: Claim 36 of copending Application No. 10/357,422 discloses a first workpiece holder having first electrical contacts and a first bath comprising an alkaline plating solution, and the second electrochemical processing station comprises a second workpiece holder having second electrical contacts and a second bath comprising an acidic plating solution.

Claim 37: Claim 37 of copending Application No. 10/357,422 discloses at least one processing station that can operate in the enhancement mode to enhance the seed layer and then operate in the bulk plating mode to fill the recesses.

Claim 38: The recitation therein at least one process station that operates in the enhancement mode by electroplating additional material onto the seed layer” has been construed as a process limitation that does not further add structure to the apparatus. However, the apparatus of copending Application No. 10/357,422 appears capable of performing as claimed as both apparatus are structurally similar.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Application No. 10/357,422.

Claim 34: Application No. 10/357,422 discloses a tool for electrochemically depositing copper into submicron micro- recesses on a workpiece having a nonuniform copper seed layer less than 500 Å thick, the apparatus comprising: an automated robotic transfer mechanism, a plurality of electrochemical processing stations arranged about the robot so that the robot can automatically transfer workpieces to/from the processing stations, the processing stations having baths containing a plating solution including copper and workpiece holders, and the processing stations being configured to operate in a seed layer enhancement mode in which additional copper is electroplated onto the workpiece to enhance the seed layer for filling the recesses and a bulk plating mode in which copper is electroplated onto the workpiece until the recesses are filled.

Application No. 10/357,422 does not disclose a **processing stations configured to electrochemically deposited copper.**

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected an apparatus configured to electroplate copper to be capable of electrochemically depositing copper as both structurally similar and both employ similar plating solutions.

Claim 36: Claim 36 of copending Application No. 10/357,422 discloses a first workpiece holder having first electrical contacts and a first bath comprising an alkaline plating solution, and

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the second electrochemical processing station comprises a second workpiece holder having second electrical contacts and a second bath comprising an acidic plating solution.

Claim 37: Claim 37 of copending Application No. 10/357,422 discloses at least one processing station that can operate in the enhancement mode to enhance the seed layer and then operate in the bulk plating mode to fill the recesses.

Claim 38: The recitation therein at least one process station that operates in the enhancement mode by electroplating additional material onto the seed layer” has been construed as a process limitation that does not further add structure to the apparatus. However, the apparatus of copending Application No. 10/357,422 appears capable of performing as claimed as both apparatus are structurally similar.

9. Claims 34-38 are provisionally rejected under 35 U.S.C. 103(a) as being obvious over copending Application No. 10/357,422 which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e) if published or patented. This provisional rejection under 35 U.S.C. 103(a) is based upon a presumption of future publication or patenting of the conflicting application.

Claim 34: Application No. 10/357,422 discloses a tool for electrochemically depositing copper into submicron micro- recesses on a workpiece having a nonuniform copper seed layer less than 500 Å thick, the apparatus comprising: an automated robotic transfer mechanism, a plurality of electrochemical processing stations arranged about the robot so that the robot can automatically transfer workpieces to/from the processing stations, the processing stations having

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baths containing a plating solution including copper and workpiece holders, and the processing stations being configured to operate in a seed layer enhancement mode in which additional copper is electroplated onto the workpiece to enhance the seed layer for filling the recesses and a bulk plating mode in which copper is electroplated onto the workpiece until the recesses are filled.

Application No. 10/357,422 does not disclose a **processing stations configured to electrochemically deposited copper**.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected an apparatus configured to electroplate copper to be capable of electrochemically depositing copper as both structurally similar and both employ similar plating solutions.

Claim 36: Claim 36 of copending Application No. 10/357,422 discloses a first workpiece holder having first electrical contacts and a first bath comprising an alkaline plating solution, and the second electrochemical processing station comprises a second workpiece holder having second electrical contacts and a second bath comprising an acidic plating solution.

Claim 37: Claim 37 of copending Application No. 10/357,422 discloses at least one processing station that can operate in the enhancement mode to enhance the seed layer and then operate in the bulk plating mode to fill the recesses.

Claim 38: The recitation therein at least one process station that operates in the enhancement mode by electroplating additional material onto the seed layer” has been construed as a process limitation that does not further add structure to the apparatus. However, the

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apparatus of copending Application No. 10/357,422 appears capable of performing as claimed as both apparatus are structurally similar.

This provisional rejection might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by a showing of a date of invention for the instant application prior to the effective U.S. filing date of the copending application under 37 CFR 1.131. For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas H Parsons
Examiner
Art Unit 1745



Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700